;login:

The USENIX Association Newsletter

Volume 12, Number 6 **November/December 1987**

CONTENTS

Dallas USENIX Conference 3
  Scheduled Dallas Tutorials 3
Call for Papers: Summer 1988 USENIX Conference 4
Fifth Workshop on Real-Time Software and Operating Systems 5
cpio 6
Book Reviews 9
  New System V Books 9
    Kevin W. Baranski-Walker
  Portable C and UNIX System Programming 10
    John S. Quarterman
  UNIX System Administration 13
    Rob Kolstad
Summary of the Board of Directors' Meeting 14
New Membership Rates Set 15
Computing Systems – New USENIX Quarterly 16
1988 Elections for Board of Directors 16
2.10BSD Software Release Available 17
Have You M-o-v-e-d? 17
4.3BSD Manuals Available to All Members 18
  4.3BSD Manual Reproduction Authorization and Order Form 19
Future Meetings 20
Publications Available 20
French UNIX User's Group Conference 21
EUUG Spring 1988 Conference 21
Local User Groups 22

The closing date for submissions for the next issue of *;login:* is January 3, 1988

USENIX **THE PROFESSIONAL AND TECHNICAL UNIX® ASSOCIATION**

NOTICE

;login: is the official newsletter of the USENIX Association, and is sent free of charge to all members of the Association.

The USENIX Association is an organization of AT&T licensees, sub-licensees, and other persons formed for the purpose of exchanging information and ideas about UNIX[†] and similar operating systems and the C programming language. It is a non-profit corporation incorporated under the laws of the State of Delaware. The officers of the Association are:

President	Alan G. Nemeth *usenix!agn*
Vice-President	Deborah K. Scherrer *usenix!scherrer*
Secretary	Waldo M. Wedel *usenix!wedel*
Treasurer	Stephen C. Johnson *usenix!scj*
Directors	Rob Kolstad *usenix!kolstad* Marshall Kirk McKusick *usenix!mckusick* John S. Quarterman *usenix!jsq* David A. Yost *usenix!day*
Executive Director	Peter H. Salus

The editorial staff of *;login:* is:

Editor & Publisher	Peter H. Salus *usenix!peter*
Technical Editor	Kevin Baranski-Walker *usenix!kevin*
Copy Editor	Michelle Dominijanni *{masscomp,usenix}!mmp*
Production Editor	Tom Strong *usenix!strong*

Other staff members are:

Betty J. Madden	Office Manager
Emma Reed	Membership Secretary

USENIX Association Office
P.O. Box 2299
Berkeley, CA 94710
(415) 528-8649
{uunet,ucbvax}!usenix!office

Judith F. DesHarnais Conference Coordinator

USENIX Conference Office
P.O. Box 385
Sunset Beach, CA 90742
(213) 592-3243 or 592-1381
{uunet,ucbvax}!usenix!judy

John L. Donnelly Tutorial & Exhibit Manager

USENIX Exhibit Office
5398 Manhattan Circle
Boulder, CO 80303
(303) 499-2600
{uunet,ucbvax}!usenix!johnd

Contributions Solicited

Members of the UNIX community are encouraged to contribute articles to *;login:*. Contributions may be sent to the editors electronically at the addresses above or through the U.S. mail to the Association office. The USENIX Association reserves the right to edit submitted material.

;login: is produced on UNIX systems using *troff* and a variation of the –me macros. We appreciate receiving your contributions in *n/troff* input format, using any macro package. If you contribute hardcopy articles please send **originals** and leave left and right margins of 1″ and a top margin of 1½″ and a bottom margin of 1¼″.

Acknowledgments

The Association uses a SUN[‡] 3/180S running SUN OS for support of office and membership functions, preparation of *;login:*, and other Association activities.

Connected to the SUN is a QMS Lasergrafix[*] 800 Printer System donated by Quality Micro Systems of Mobile, Alabama. It is used for general printing and draft production of *;login:* with *ditroff* software provided by mt Xinu.

This newsletter is for the use of the membership of the USENIX Association. Any reproduction of this newsletter in its entirety or in part requires written permission of the Association and the author(s).

[†] UNIX is a registered trademark of AT&T.

[‡] SUN is a trademark of Sun Microsystems, Inc.

[*] Lasergrafix is a trademark of Quality Micro Systems.

Copyright © 1987 USENIX Association–All Rights Reserved

Dallas USENIX Conference

Rob Kolstad, Chair

Tuesday through Friday, February 9-12, 1988, mark the Winter 1988 USENIX Technical Conference in Dallas, Texas. The Grand Kempinski Hotel (formerly The Registry Hotel) will host the conference's two days of tutorials and two days of technical sessions.

There will be 21 tutorials, including several new ones. The two days of technical presentations will include two special half-day sessions on large-scale networks of workstations (as implemented in the Andrew project at Carnegie-Mellon University and MIT's Project Athena) and sessions devoted to new systems management techniques, the popular work-in-progress sessions late in the day, and other talks on state-of-the-art technical advances in UNIX and its applications.

The program committee is currently reviewing over 80 abstracts that were submitted for the conference. I am confident that the program will be an exceptionally strong and interesting one.

Conference information will be sent to all current members or may be obtained from:

Judy DesHarnais
USENIX Conference Office
P.O. Box 385
Sunset Beach, CA 90742

(213) 592-1381 or 592-3243
{uunet,ucbvax}!usenix!judy

See you in Dallas!

Scheduled Dallas Tutorials

TUESDAY

Introduction to 4.3BSD Internals
Introduction to UNIX System V Internals
UNIX System V Streams Device Driver
Managing A Local Area Network
Managing a Network of NFS Systems
Software Development Using C and UNIX
UNIX System V Remote File Sharing
X Window System Programming
An Introduction to C++
Sendmail, news, and uucp

WEDNESDAY

Advanced Topics on 4.3BSD Internals
Advanced UNIX System V Internals
UNIX Device Driver Design (4.2BSD)
4.xBSD System Administration
Language Construction Tools on the UNIX System
Special Topics in C
Open Network Computing and NFS
NeWS
An Introduction to 3D Computer Graphics
POSIX Implementation
The MACH Operating System

Call for Papers
Summer 1988 USENIX Conference

San Francisco

June 20-24, 1988

Papers in all areas of UNIX-related research and development are solicited for formal review for the technical program of the 1988 Summer USENIX Conference. Accepted papers will be presented during the three days of technical sessions at the conference and published in the conference proceedings. The technical program is considered the leading forum for the presentation of new developments in work related to or based on the UNIX operating system.

Appropriate topics for technical presentations include, but are not limited to:

- Kernel enhancements
- UNIX on new hardware
- User interfaces
- UNIX system management
- The internationalization of UNIX
- Performance analysis and tuning
- Standardization efforts
- UNIX in new application environments
- Security
- Software management

All submissions should contain new and interesting work. Unlike previous technical programs for USENIX conferences, the San Francisco conference is requiring the submission of **full papers** rather than extended abstracts. Further, a tight review and production cycle will not allow time for rewrite and re-review. (Time is, however, scheduled for authors of accepted papers to perform minor revisions.) Acceptance or rejection of a paper will be based *solely* on the work as submitted.

To be considered for the conference, a paper should include an abstract of 100 to 300 words, a discussion of how the reported results relate to other work, illustrative figures, and citations to relevant literature. The paper should present sufficient detail of the work plus appropriate background or references to enable the reviewers to perform a fair comparison with other work submitted for the conference. Full papers should be 8-12 single spaced typeset pages, which corresponds to roughly 20 double spaced, unformatted, typed pages. Format requirements will be described separately from this call. All final papers must be submitted in a format suitable for camera-ready copy. For authors who do not have access to a suitable output device, facilities will be provided.

Four copies of each submitted paper should be received by **February 19, 1988**; this is an absolute deadline. Papers not received by this date will not be reviewed. Papers which clearly do not meet USENIX's standards for applicability, originality, completeness, or page length may be rejected without review. Acceptance notification will be by **April 4, 1988**, and final camera-ready papers will be due by **April 25, 1988**.

Send technical program submissions to:

Sam Leffler
SF-USENIX Technical Program
PIXAR
P.O. Box 13719
San Rafael, CA 94913-3719

(415) 499-3600
ucbvax!sfusenix

FULL PAPERS ARE DUE FEBRUARY 19, 1988

Fifth Workshop On Real-Time Software and Operating Systems

May 12-13, 1988
Omni-Shoreham Hotel
Washington, DC

Sponsored by
The IEEE Computer Society
The USENIX Association

This year's workshop broadens the scope to include general real-time systems. This workshop will bring together researchers, designers, and implementers of real-time operating systems and software. There will be a substantial emphasis on practical experience, so workers from industrial organizations are encouraged to attend. Topics of specific interest include:

- Primary requirements of real-time systems
- Distributed real-time operating systems
- Application-specific operating systems
- Practical experiences and implications
- Exotic applications: medicine, music, etc.
- Architectural support for real-time
- Language, programming support, and reusability
- Types of real-time constraints
- Scheduling and resource management
- Predictability, adaptability, and maintainability
- Reliability and fault tolerance
- Instrumentation and performance measurement
- Case studies

The format of the workshop will be geared to encourage intense technical interactions and focussed discussions.

Attendance will be limited to between 75 and 100 active workers in the field. To participate in the workshop, please submit four copies of an extended abstract or position paper of up to 5 pages describing your current efforts to Lui Sha by **February 15, 1988**. The abstract should focus on insights and lessons gained from recent research and practical experience. Complete details regarding the workshop will be sent to all participants along with the acceptance letters by March 15, 1988. A digest of accepted abstracts will be made available to participants at the workshop.

General Chair
Professor John Stankovic
Department of Computer
and Information Science
Graduate Research Center
University of Massachusetts
Amherst, MA 01003
(413) 545-0720
stankovic@cs.umass.edu

Program Co-chair
Dr. Marc Donner
IBM Research
P.O. Box 218
Yorktown Heights, NY 10598
(914) 945-2032
donner@ibm.com

Program Co-chair
Dr. Lui Sha
Computer Science Department
Carnegie-Mellon University
Schenley Park
Pittsburgh, PA 15213
(412) 268-7668
sha@k.gp.cs.cmu.edu

cpio

In the the July/August 1987 issue of ;login: *(vol. 12, No. 4), there was a lengthy discussion of* `tar` *vs.* `cpio`.

This is the latest `cpio` proposal, as it appears in 1003.1 Draft 11 (except I've probably got the section numbers wrong). The "previous section" is, of course, USTAR, unchanged for some time.

John S. Quarterman

FOR COMPUTER ENVIRONMENTS

Std 1003.1–Draft 11

Editor's Note: The following section has been proposed as a replacement for, or an addition to, the previous section. The small group that considered the issue at the June 1987 meeting determined that indications were needed on how to extend this subsection to account for at least the following items:

- symbolic links
- contiguous files
- file name length
- i-node number size

There is a possibility that these concerns may be addressed by text in the Rationale, rather than in the body of the standard.

10.3.1 cpio Archive Format

The byte-oriented `cpio` archive format is a series of entries, each comprised of a header that describes the file, the name of the file, and then the contents of the file.

An archive may be recorded as a series of fixed size blocks of bytes. This blocking shall be used only to make physical I/O more efficient. The last group of blocks is always at the full size.

For the byte-oriented `cpio` archive format, the individual entry information must be in the order indicated and is described by:

Byte-Oriented cpio Archive Entry

Field Name	Header Length	Interpreted as
c_magic	6 bytes	octal number
c_dev	6 bytes	octal number
c_ino	6 bytes	octal number
c_mode	6 bytes	octal number
c_uid	6 bytes	octal number
c_gid	6 bytes	octal number
c_nlink	6 bytes	octal number
c_rdev	6 bytes	octal number
c_mtime	11 bytes	octal number
c_namesize	6 bytes	octal number
c_filesize	11 bytes	octal number

File Name

Field Name	Length	Interpreted as
c_name	c_namesize	pathname string

File Data

Field Name	Length	Interpreted as
c_filedata	c_filesize	data

10.3.1.1 Header

For each file in the archive, a header as defined above shall be written. The information in the header fields shall be written as streams of bytes interpreted as octal numbers and shall be right-justified and zero filled. The fields shall be interpreted as follows:

- c_magic shall identify the archive as being a transportable archive by containing the magic bytes as defined by MAGIC ("070707").
- c_dev and c_ino shall contain values which uniquely identify the file within the archive (i.e., no files shall contain the same pair of c_dev and c_ino values unless they are links to the same file). The values shall be determined in an implementation defined manner.
- c_mode shall contain the file type and access permissions as defined in the tables below.
- c_uid shall contain the user id of the owner.
- c_gid shall contain the group id of the group.
- c_nlink shall contain the number of links referencing the file at the time the archive was created.
- c_rdev shall contain implementation defined information for character or block special files.

- c_mtime shall contain the latest time of modification of the file.
- c_namesize shall contain the length of the path name, including the terminating null byte.
- c_filesize shall contain the length of the file. This is the length of the data section following the header structure.

10.3.1.2 File Name

c_name shall contain the path name of the file. The length of the name is determined by c_namesize; the maximum length of this string is 256 bytes.

10.3.1.3 File Data

Following c_name, there shall be c_filesize bytes of data. Interpretation of such data shall occur in a manner dependent on the file. If c_filesize is zero, no data shall be contained in c_filedata.

10.3.1.4 Special Entries

Special files, directories, and the trailer are recorded with c_filesize equal to zero. The header for the next file entry in the archive shall be written directly after the last byte of the file entry preceding it. A header denoting the file name "TRAILER!!!" shall indicate the end of the archive; the contents of bytes in the last block of the archive following such a header are undefined.

10.3.1.5 cpio Values

Values needed by the `cpio` archive format are described as follows:

Values for c_mode field

File permissions

Name	Value	Indicates
C_IRUSR	000400	read by owner
C_IWUSR	000200	write by owner
C_IXUSR	000100	execute by owner
C_IRGRP	000040	read by group
C_IWGRP	000020	write by group
C_IXGRP	000010	execute by group
C_IROTH	000004	read by others
C_IWOTH	000002	write by others
C_IXOTH	000001	execute by others
C_ISUID	004000	set uid
C_ISGID	002000	set gid
C_ISVTX	001000	reserved

Values for c_mode field

File type

Name	Value	Indicates
C_ISDIR	040000	directory
C_ISFIFO	010000	FIFO
C_ISREG	100000	regular file
C_ISBLK	060000	block special
C_ISCHR	020000	character special
	110000	reserved
	120000	reserved
	140000	reserved

C_ISDIR, C_ISFIFO, and C_ISREG shall be supported on a POSIX conforming system; additional values defined above are reserved for compatibility with existing systems. Additional file types may be supported; however, such files should not be written on archives intended for transport to portable systems.

10.3.1.6 References

<grp.h> §9.2.1, <pwd.h> §9.2.2, <sys/stat.h> §5.6.1, chmod() §5.6.4, link() §5.3.4, mkdir() §5.4.1, read() §6.4.1, stat() §5.6.2.

The following represents the position of X/Open on `cpio`. – PHS

From: Jim R Oldroyd
<mcvax!inset!jr@seismo.css.gov>
Date: Wed Jul 15 18:26:19 BST 1987
Organization: The Instruction Set Ltd.
To: jsq@longway.tic.com
Subject: Benefits of cpio over tar

I would like to present a number of points regarding `cpio` which I feel are relevant to the ongoing discussion concerning a Data Interchange Format for the POSIX 1003.1 standard.

I shall correct a number of important points regarding the `cpio` format; points which have been incorrectly stated in recent articles.

1. At no time has a proposal been made to standardise the binary `cpio` format. Only the `cpio -c` format is under consideration.

2. The `cpio -c` format is widely in use in Europe for both Data Interchange and Archival purposes. Its widespread use can be attributed, in part, to its endorsement by the X/OPEN Group.

3. Only one version of the `cpio -c` format is currently in use. It is this format being proposed for standardisation.

4. The `cpio -c` header is written entirely in character form. No numerical information is stored in machine-dependent binary form.

5. The `cpio -c` format is capable of archiving and restoring all POSIX file types: directories, block special files, character special files, regular files and fifos.

6. The `cpio -c` format can handle pathnames up to 256 bytes. This is the length guaranteed on all POSIX systems.

7. The `cpio -c` format is in the public domain. (See X/OPEN Portability Guide, Volume 2, `cpio(4)`).

8. Inode numbers are not recorded. Symbolic values (derived from a file's inode and device numbers) are stored in the header block. These values are used solely for hard link resolution.

9. File types are stored in symbolic form. Symbols are derived from historical UNIX file type values. There is room for 64 file types; currently only 5 are supported.

A number of points have recently been raised as drawbacks of `cpio`. These points seem to be problems with a particular implementation of a `cpio` utility. As the characteristics of the utility are not relevant for 1003.1, I present only a short summary of points:

file names are terminated by '\0':
> This is normal UNIX practice for string termination and applies to `tar` (and USTAR) equally. On `cpio`, the '\0' is redundant information and need not be interpreted as the file name length is also provided.

the user interface is less convenient:
> This is subjective; many people feel that the opposite is true. The user interface is easily alterable (discuss with 1003.2).

file name size is 128 bytes:
> Wrong! It is 256; see above.

`cpio` header is full of OS dependent information:
> Wrong! All information describes file characteristics. There is no OS dependent information. See point 9, above.

header must start on a word boundary:
> Wrong! The header is character oriented and can be read as individual bytes from the archive.

format cannot be extended to meet future requirements:
> Wrong! Implementations already exist which can archive symbolic links and contiguous files. There is far more scope for future extension than available in the proposed USTAR format.

Independent of the archive format used, some guidelines must be followed to ensure that an archive can be extracted on ANY POSIX system. Note that the following are NOT rules for using `cpio`; they apply equally well to other interchange formats if portability across ALL systems is to be achieved:

- only POSIX defined file types should be archived
- headers should be written in US ASCII character set
- minumum values in section 2.9 for h_uid, h_gid, h_nlinks, etc. should not be exceeded
- no portion of any filename should exceed 14 characters
- one `cpio` archive should fit on a single medium
- only one archive should exist per medium
- relative pathnames (ie, no leading /) should be used
- tapes should be written in "raw" mode
- tapes should be written with 5120 byte blocks

Any archive intended for use only between systems supporting more capabilities than the minimum required by POSIX need not be so restrictive.

I believe that the `cpio -c` tape format has a number of strong advantages over both the existing `tar` and the POSIX extended `tar` formats. The `cpio -c` format handles all POSIX file types correctly, it has been extended to handle other known file types and there is adequate opportunity for further extension.

Thank you,
Jim R Oldroyd

Book Reviews

New System V Books

Reviewed by Kevin D. Baranski-Walker

University of California - Berkeley
kevin@violet.Berkeley.EDU

This review will take a look at two recent series of works on the AT&T System V Release 3 of UNIX. More precisely this is a review of a re-packaging of the familiar AT&T reference manuals and a look into the latest System V related readings from The Waite Group. The books reviewed are:

American Telephone and Telegraph; Prentice-Hall publishers:

- UNIX System V Utilities Release Notes, AT&T
- UNIX System V Programmer's Reference Manual, AT&T
- UNIX System V Network Programmer's Reference Guide, AT&T
- UNIX System V Streams Programmer's Guide, AT&T
- UNIX System V Streams Primer, AT&T
- UNIX System V User's Reference, AT&T
- UNIX System V User's Guide, 2nd Ed., AT&T
- UNIX System V Programmer's Guide, AT&T

The Waite Group; Howard W. Sams & Company publishers:

- UNIX System V Primer (Revised Edition), Waite, Prata and Martin
- UNIX System V Bible (Commands and Utilities), Prata and Martin

Prentice-Hall has acquired the publication rights for the AT&T System V Release 3.0 series of guides and reference manuals. This marks a departure from what has become a tradition in the publication of computer system related documents. Typically the manufacturer of the software produces their documentation within their own facilities. Beginning with this series AT&T has granted exclusive publication rights to Prentice-Hall. Prentice-Hall is scarcely novice in the publication of computer science or computer industry related texts. Their most notable (at least in sheer volume of sales) is the *C Programming Language*, by Kernighan and Ritchie. Clearly the advantage for a software developer to enlist the services of a conventional book publisher to package and market their documentation, is to broaden the distribution channels and to provide ready access to potential readers that may otherwise be difficult. If indeed this is the rationale for AT&T and Prentice-Hall to enter into such an arrangement, then the goal may well have been reached.

Aside from the production changes of this series, which are readily evident, very little in terms of content has changed from the previous printing. The contents of the *User's Reference Manual*, *Programmer's Reference Manual* and *Utilities Release Notes* in particular remain entirely unchanged from the original AT&T printing. A notable omission in these three manuals is the inclusion of useful indices and glossary. Inasmuch as these handbooks are directed at novice users, as well as referral materials for experts, such an oversight exacerbates many of the long held grievances of the UNIX documentation.

The *Streams Primer* and *Streams Programmer's Guide* reflect a refreshing change from the previous printings. Diagrams and examples are abundant and well suited. Once again, though, the indexing is lackluster in the case of the programmer's guide and again non-existent in the primer.

Though the *Network Programmer's Guide* maintains a similar flavor to the Streams primer and guide, it provides a sensible balance between the needs of the neophyte reader and the more experienced network programmer. Appendix C offers several beneficial examples that detail varying network models with exceptional clarity. This volume is mandatory for any System V user.

Very few assumptions are made about the reader in the *User's Guide*. It presents a fairly focused overview of the new user's approach to UNIX and System V in particular, yet can still function as a useful reference guide for the experienced. As with many introductory texts on computer related subjects, the User's Guide indulges in a liberal discussion on the characterization of the user's relation to the system. Once the user has a grasp on these basics, the essentials of file accessing and manipulation (both command line and editing), shell programming, mail, and networking overviews are presented. Each section ends with several exercises, some merely to reinforce your just concluded reading while others provide useful trials in solving increasingly complex tasks. The User's Guide concludes with a quick reference command summary for the most used System V commands, `ed`, `vi` and shell programming commands. As with the Network guide a glossary is provided.

The *Programmer's Guide* is directed at application programmers and as with the Network Programmer's Guide delivers a very careful balance between the needs of the occasional, novice user and that of the experienced programmer. The seventeen chapters are rather comprehensive with special attention paid to the System V support tools; `awk`, `lex`, `yacc`, `curses`, `make`, `SCCS`, `sdb` and `lint`. Additionally, excellent tutorials on file and record locking, shared libraries and interprocess communication accompany the system tools section.

Howard W. Sams & Company are best known for publishing hobbyist oriented handbooks and reference materials (including numerous "How-To" and repair guides). Lately Sams has broadened their repertoire to include several MS-DOS, XENIX, C language and UNIX titles. Additionally they have merged the UNIX System Library books from Hayden Book publishers. A good portion of these combined titles have been authored or co-authored by The Waite Group. In the *UNIX System V Primer*, Waite, Martin and Prata have produced a very comprehensive indoctrination for the new System V user, similar to their previous introductory work on UNIX, "UNIX Primer Plus." Unfortunately this primer is so awash with innane comic illustrations and trite examples that it's difficult to recommend. The authors direct this book at "... a secretary or a manager in an office, or student in a computer science class, or a computer hobbyist who is interested in UNIX ...". For such an all-encompassing audience a slightly less jocular forum would have been in order. Presentation aside, this book does serve well as a primer on System V UNIX (indeed the introduction is relevant to all UNIX novices). The diagrams, charts, sidebars and later examples are concise and well thought. Of particular note is chapter 9, "The UNIX Shell: Command Lines, Redirection, and Shell Scripts." This chapter offers a fine tutorial on the user's interaction with and control of the system.

The *UNIX System V Bible (Commands and Utilities)* is a quality companion to the AT&T User's Reference and User's Guide. This text has numerous useful examples and parallels the structure of the standard reference manual. A special section has been added entitled "UNIX Features" which is an excellent summary of the System V nuances.

Portable C and UNIX System Programming

by J. E. Lapin [Rabbit Software]

(Prentice-Hall)

Review by John S. Quarterman

Texas Internet Consulting
uunet!longway!jsq

This is a useful book. It fits in the gap between the existing literature about C and the little there is about writing portable UNIX programs[1,2]. The authors (of which there are actually eight) give a good impression right away by noting in the Preface that "no such thing as an 'unimportant' change was assumed" in their comparisons of functional differences in the programming interface. They have clearly put years of effort into this book, and they even supply a `uucp` mail address for comments. There are still problems, some of them serious, but first the best points.

Chapter 2, "Portable C Standard," about Rabbit Software's internal guidelines (not to be confused with X3J11's C Language Standard), is enlightened. Not only are the guidelines sensible (such as their comments on the comma operator in 2.12.2 and on the `goto` statement in 2.13.1), organized (into Portability Rules, Maintenance Rules, Stylistic Guidelines, and Performance Techniques), and mostly complete, but the principles for choosing the rules are themselves admirable. Their method for handling multiple modules (2.14, also 2.3) seems a bit peculiar at first, but will be obvious to readers familiar with Modula-2.

There are a couple of problems with this material. It is good that the authors recognize the usefulness of a uniform textual style for programs, but they don't seem to be aware of the existing de facto standard, the "Indian Hill Style Sheet," which rather closely matches the basic style of most software written by the Bell Labs Research group or UC Berkeley Computer Science Research Group. Personally, I find Lapin's choice of positioning of braces to be the ugliest of all possibilities.

A more serious problem (perhaps unavoidable due to the publishing schedule) with this material and the book in general is that the last revisions referenced of the X3.159 C Language Standard by the ANSI X3J11 committee or the IEEE 1003.1 Standard for Portable Operating System Interface for Computer Environments (POSIX) were those of November 1985. Many things have changed since then. X3J11 has supplied a Rationale appendix to their standard which, among other things, clarifies historically obscure points regarding scope and storage class; that information could have helped in 2.3. Nonetheless, the book is generally accurate in its information regarding the C language.

Chapter 5, "Maintaining Portable Systems," has a good bit of practical advice clearly derived from experience, and could save programmers many mistakes. There is a very good list in 5.2.3 of recommended make productions that every makefile should support. Useful but often overlooked rules are collected and organized, for example, that only the Bourne shell should be used for portable shell scripts (5.4.1). Unfortunately, while the authors explicitly recommend against the use of the C shell for such scripts, they don't warn about the Korn shell. Use of the last is actually more insidious, since scripts written for it look so much like Bourne shell scripts, but use extensions that won't work with the Bourne shell. The authors mention SCCS (5.2), but fail to mention RCS.

The book compares a plethora of UNIX variants, including Version 7, System III, System V, 4.1BSD, 4.2BSD, 4.3BSD, XENIX 2.3, 3.0, and 5.0. It is admirable that this has been attempted (especially that the XENIX versions were included); there is much useful information presented, and clearly most of the work on the book went into the UNIX comparisons. Unfortunately, the material on comparisons of UNIX dialects is not as good as that on the C language.

Some historical information on the UNIX System in 1.5 is inaccurate and misleading. This is as much because of placement of information as because of what is actually said. The Programmer's Work Bench (PWB) is not mentioned in its historical period (1.5.1), even though it is one of the principal ancestors of System III and System V.

Bill Joy is first mentioned as working at Sun Microsystems (1.5.4), with no clear evidence given that he ever worked at Berkeley (1.5.2), nor of the PDP-11 Berkeley releases that preceded the Berkeley VAX work, nor of the paging system that was the first major part of that work. There is no mention whatever of DARPA, the government agency that funded much of the BSD work and strongly influenced its research and networking orientation. The only place networking is mentioned is when Sun's Network File System (NFS) is misidentified (1.5.3) as "the Networked File Standard (NFS) by a consortium of influential 4.2BSD vendors."

One could easily get the impression from the book that Dennis Ritchie and Ken Thompson are the principal developers of System V[3]. Their Bell Laboratories research system, V8 or Eighth Edition, is misdiagrammed (3.1) as being derived directly from Version 7, when the kernel, at least, was derived from 4.1BSD. (Their current system is Ninth Edition.)

The authors appear to have only seen a draft ("UniForum Draft Standard" is mentioned in 1.5.3) of the /usr/group 1984 Standard, even though other information was incorporated into the book at least as late as the end of 1985, according to the bibliographic information given.

The comments made (1.5.4) about the essential equivalence of X3J11's C Language Standard, the System V Interface Definition

(SVID), and the IEEE P1003 work may have been correct in 1985, but are clearly not true today. X3J11's Rationale states that the C Standard is derived from the Kernighan and Ritchie book and from the /usr/group 1984 Standard. The IEEE 1003.1 Trial Use Standard incorporated major features from 4.2BSD, and more recent drafts include more such features. Details on relations among these standards, System V, and 4.3BSD, may be found in a recent publication by /usr/group[4].

There are also a number of facilities in 1003.1 that do not exactly match any existing system, which is not to say that Lapin's basic point that progress is being made on real, international C and UNIX programming interface standards is wrong, but the way it is actually happening is not quite as the book predicted. For example, X/OPEN, the originally European-only group of computer manufacturers (1.5.4), has expanded to include U.S. companies and has revised their earlier strict adherence to the SVID in favor of conformance to the eventual IEEE 1003.1 Full Use Standard.

System V Release 3 and Issue 2 of the SVID include several features, such as the `rename()`, `mkdir()`, and `rmdir()` system calls, that were derived from the IEEE 1003.1 Trial Use Standard, which in turn got them from 4.2BSD. The most noticable such facility is the directory manipulation routines (`opendir()`, `readdir()`, `closedir()`). Although this means that those routines have become a de facto standard and will probably come to be found on most UNIX variants, Lapin's inclusion of code in Appendix D which emulates them on old-style file systems is still a public service.

The main problem with the material on UNIX variants (not only the historical information, but also the actual comparisons) is a shortage of information about BSD systems[5,6]. Although the authors state (3.4.2) that 4.1BSD was their home system while most of the book was being prepared, they lump 4.1BSD and 4.2BSD together, with no mention of many of the profound differences between them, such as the networking facilities, inter-process communication, `select(2)`, long file names, symbolic links, scatter/gather I/O, more accurate timers, etc. It is true that many of these facilities are not appropriate for inclusion in a book about portability among UNIX variants, because other variants often don't have these features at all. Yet, many System V-based systems have had the networking (and other) facilities from 4.2BSD added, and many facilities from BSD systems have been adopted by System V and elsewhere. These include not only the ones mentioned in the previous paragraph, but also such things as `catman`, which the book misidentifies (3.5) as originating in System V Release 2. There are also errors of omission, as when the 4.2BSD `restore` program is discussed (3.6), but the text doesn't mention that the original reason for the rewrite from the Version 7 `restor` program was to allow restoring through the ordinary file system system calls rather than by writing directly to the raw disk device.

Nonetheless, most of the comparison information is accurate and amazingly exhaustive: there are not only tables of comparison for most commands, system calls, and library routines, there are even tables of comparison for options of commands where that is useful. Finally let's not forget the occasional drollery: documenters who omit games will reincarnate as "worker insects of some sort."

This book is useful as it is now. I recommend buying it, while waiting for the authors to update it.

1. Chambers, John B., and Quarterman, John S., "UNIX System V and 4.1C BSD," Proceedings of Summer 1983 Toronto USENIX Conference, pp. 267-291, USENIX Association, P.O. Box 2299, Berkeley, CA 94710, 14 July 1983.

2. Uniejewski, Joseph, "UNIX System V and BSD4.2 Compatibility Study," Apollo Computer Inc., Chelmsford, MA 01824, March 28, 1985.

3. Bach, Maurice J., *The Design of the UNIX Operating System*, Prentice-Hall, Englewood Cliffs, NJ, 1986.

4. /usr/group, "POSIX Explored," /usr/group, 4655 Old Ironsides Drive, Suite 200, Santa Clara, CA 95050, 408-986-8840, 30 pp., October 1987.

5. Quarterman, J. S., Silberschatz, A., and Peterson, J. L., "4.2BSD and 4.3BSD as Examples of the UNIX System," ACM Computing Surveys, Volume 17, Number 4, pp. 379-418, December 1985.

6. Leffler, S. J., McKusick, M. K., Karels, M., Quarterman, J. S., The Design and Implementation of the 4.3BSD UNIX Operating System, Addison-Wesley, Reading, MA, 1988.

UNIX System Administration

by Frank Burke

(ISBN 0-15-593025-7, LC #86-70500)

Reviewed by Rob Kolstad

Convex Computer Corp.
convex!kolstad

This book's primary objective is "to educate UNIX system administrators." It is intended to be used in the fourth semester of a computer science degree program in which students have some degree of familiarity with UNIX. It succeeds in this singular objective – the book is a fine one for a college environment.

It is, however, a UNIX SYSTEM V administrator's guide. Owners of 4.xBSD systems will find only minimum utility here. It is surprising that administration techniques can be so different between AT&T and Berkeley UNIX. As stated in the summary, it is also only an introduction, not a comprehensive reference guide.

Thirteen chapters take the student through a "UNIX Computer Center" (complete with "UNIX operators"), login administration, teletype administration, file system administration, process administration, operations administration, security comments, system tuning, configuration, system generation, `uucp` network administration, and update administration.

The book includes many examples, but of course, it's impossible to have too many examples in this kind of presentation. The procedures set forth in numbered steps can greatly aid the novice system administrator in accomplishing his or her various goals.

While mastering the book may allow a student to begin duties as a system manager (a big step up when compared to former schema common in the just-bought-a-UNIX-box community), the book by no means teaches the becoming of an expert system administrator. Why? I suspect the reason relates to the book's intended purpose of a single semester course. Only seven column-inches (four inch columns) describe `fsck`. While a short discussion summarizes the file system structure, it is not possible to learn really effective use of the `fsck` program from the description.

Backups receive a similarly cursory treatment. While the commands to create a backup tape are listed, the "big picture" of a backup system does not appear. Again, the limited scope of the book may have precluded more detailed treatment.

In general, the book presents at least one example of just about every System V system administration feature. The motivation for the example may be brief – sometimes **too** brief. Unfortunately, the book will give no aid to those administrators joining the world of local area networking (TCP/IP and ethernet or STARLAN, for example). It must be considered as a very general introductory textbook.

Schools in the System V fold may wish to use it for a textbook if augmented by a practicum/laboratory. The Instructor's Guide (accompanying the text) provides two pages of suggestions for such a laboratory, but they're brief, e.g.: "Students learn about a dial-up network by studying `uucp` commands and files."

Harcourt Brace Jovanovich publishes the book at about $16. The publisher says it is best purchased at a local bookstore; college bookstores are best.

Summary of the Board of Directors' Meeting

San Jose, CA; October 26-27, 1988

Attendance

Present at the meeting were: Stephen C. Johnson, Rob Kolstad, Marshall Kirk McKusick, Alan G. Nemeth (President), John S. Quarterman, Deborah K. Scherrer, Waldo M. Wedel, David A. Yost – Directors; Rick Adams, UUNET; Judith F. DesHarnais, Conference Coordinator; John L. Donnelly, Tutorial and Exhibit Manager; Donnalyn Frey, Public Relations; Lou Katz, FaceSaver; Sam Leffler, San Francisco Program Chair; Susan Nycum, John McKenzie, & Daniel Appelman, Baker & McKenzie (law firm); Peter H. Salus, Executive Director.

UUNET

Adams reported that the UUNET activity was ahead of expectations and had exceeded the capacity of the Tymnet lines on occasion. There was a discussion of the Trailblazer modems and whether the new technology and the use of 800 numbers might make the use of Tymnet unattractive from a cost standpoint. The Association must make two decisions: organizational status of UUNET and status of the Sequent machine (either a lease or a loan arrangement backed by the Association).

Foreign Trade

As the Association has one South African member and that member has requested a UUNET connection, John McKenzie, a lawyer expert in export controls, addressed the Board on the status of the 1986 Anti-Apartheid Act and the Department of Commerce regulations. It is clear that without special permission from the Department of State, the Association cannot send distribution tapes, manuals, conference proceedings, or *;login:* to a South African member. It was decided that Appelman would supply appropriate wording for a letter which Salus will send to the Institutional Representative, terminating the membership.

Common Carrier Status

After a discussion, the lawyers were requested to suggest procedures for clarifying the common carrier status of UUNET.

Public Relations

Donnalyn Frey submitted a proposal for public relations services for the Association for the period up to and including the San Francisco meeting. The Board was enthusiastic about */etc/motd* and some other services. The question of vendor support for Donnelly and another Editorial Roundtable was discussed. Frey was told that Salus would communicate the Board's decisions to her.

Meetings and Workshops

DesHarnais reported on the Phoenix Conference, the Graphics Workshop, and the POSIX Workshop. All had gone well. The C++ Workshop is already oversold; a second hotel (across the street in Santa Fe) is handling the overflow.

Though the general reaction to the Graphics workshop was good, it was less enthusiastic than the reaction to the previous ones. It was decided to "skip a year" and have another one in 1989.

There will be a cooperative workshop (with IEEE) on Real Time Computing in Washington in May. Melinda Shore of the Pittsburgh Supercomputing Center has proposed a Supercomputer and UNIX workshop, probably in Pittsburgh in the Spring of 1988; Scherrer will coordinate this. Matt Bishop of Dartmouth has proposed a UNIX Security workshop for September 1988. Kolstad was asked about a second Systems Administration workshop. Salus was requested to communicate with Alix Vasilatos (Project Athena) about this.

Kolstad spoke about the Dallas program. There will be two half-day sessions about MIT's Athena and CMU's Andrew projects. There are about 80 submitted abstracts.

Scherrer is acting as liaison where a keynote speaker is concerned.

Leffler reviewed the San Francisco program. The reception will be held in the Exploratorium. The Program Committee is to review full papers the week after the Dallas conference.

The was a discussion of the need for a program chair for Baltimore, summer 1989. The options for summer 1992 (New Orleans and San Antonio) were discussed.

Budget

The Board decided that the Association should run on a balanced budget for 1988. Because of the expenses entailed by the move, the acquisition of the Sun 3, the initial funding of UUNET, and the undertaking of several new projects this year, the Association has used some of its cash reserves and run over its original budget. It was decided that the membership dues would be increased to accomplish this budgetary goal.

It was decided that in the future, Salus would notify the sponsor of a project when expenditures reached 80% of budget, notify the Board at 100% of budget, and cease paying for expenditures at 120% of budget.

2.10 and 4.3BSD

Salus reported that 25 copies of the 2.10BSD tapes had been sold and that there were several unfilled orders, pending copying of tapes.

Salus reported that 6,744 copies of the User's Manual Sets, 5,944 copies of the Programmer's Sets, and 3,596 copies of the System Manager's Manual had been sold.

1987 Software Distribution

Kolstad reported that 70Mb of software had been received from Plus5 and that he and the Explorer Troop had made 550 copies of each of the two 2400′ tapes, using Convex' machinery. The tapes will be mailed to all institutional members shortly, and will be available to individual members for $200. The Board voted a one-year Supporting membership to the Convex Computer Corporation in thanks for their cooperation.

There are 35Mb of further software which will most likely comprise the 1988 software distribution.

Journal

An agreement has been signed with University of California Press and it is expected that the first issue of *Computing Systems* will appear next February.

FaceSaver

Yost circulated proof copies of several pages of the Phoenix attendee list. He said that typesetting was imminent.

Katz proposed FaceSaver service for Dallas and San Francisco. He is to have a demonstration project complete by January 15, 1988, at which time a final decision concerning Dallas will be made.

Standards

Quarterman continues to be the Association's representative to P1003. The POSIX workshop appears to have been quite successful and important to the standards community.

New Membership Rates Set

At its October meeting in San Jose, the Board of Directors of the Association set new membership fees for 1988. As the fees have remained static for four years, despite increased member services and escalating costs, the Board felt that this was reasonable.

The new rate schedule is

Student	$ 15
Individual	40
Educational Institution	125
Other Institutional	275
Supporting	1000

Computing Systems – New USENIX Quarterly

There have been a number of queries about the new USENIX journal

Computing Systems

which will be published beginning February 1988. Michael D. O'Dell, Maxim Technologies, will serve as Editor-in-Chief.

Computing Systems will be published by the University of California Press. It will appear under the aegis of the USENIX Association, with the cooperation of the EUUG. The journal will be a membership benefit for members of USENIX and available at a reduced rate of $20/year to those EUUG, AUUG, (or other national UNIX-user group) members who wish to receive it. It will be available by subscription through the University of California Press at $40/year.

Computing Systems will be dedicated to the analysis and understanding of the theory, art, design, engineering, and implementation of advanced computing systems, with an emphasis on systems inspired or influenced by the UNIX tradition. Articles concerning operating systems, architecture, networking, programming languages, and sophisticated applications are of interest. Papers will reflect a mix of theory and practical experience.

Computing Systems may, from time to time, also publish non-research articles concerning computing controversies and review articles concerning important books or papers.

Submissions, in `n/troff` format should be sent to *{uunet,ucbvax}!usenix!journal*. Hard copy submissions should be supplied in five (5) copies and mailed to

Computing Systems
USENIX Association
P.O. Box 2299
Berkeley, CA 94710

The Association hopes to have a rapid turnaround, with only 6-8 months between submission and publication.

1988 Elections for Board of Directors

The Association by-laws provide for biannual elections for the Board of Directors. In accord with those by-laws, the Board appointed Lew Law as chair of the Nominating Committee and he recommended a full committee to the Board. The committee was then appointed and a call for nominations was published in the May/June, July/August, and September/October issues of *;login:*.

The nominations of the Committee will be reported at the Dallas meeting. Thereafter, nominations will remain open until February 26. The procedure for nominations by the membership is a written statement of nomination signed by at least five (5) members in good standing, to be received by the Executive Director at the Association office by 4pm PST February 26, 1988.

Ballots will be sent to all paid-up members as of March 1, 1988, on or about March 14. Members will have until April 8 to return their ballots, in the enclosed envelopes, to the Association office. The results of the election will be announced at the San Francisco meeting and in the May/June *;login:*.

The Board is comprised of eight directors, four of whom are "at-large." The others are the President, Vice President, Secretary, and Treasurer. Newly elected directors will take office immediately following the San Francisco conference.

2.10BSD Software Release Available

The USENIX Association and the Computer Systems Research Group (CSRG) of the University of California, Berkeley, are pleased to announce the distribution of a new release of the "Second Berkeley Software Distribution" (2.10BSD).

This release will be handled by the USENIX association, and is available to all V7, System III, System V, and 2.9BSD licensees. The Association will continue to maintain the non-profit price of $200, as was charged by the CSRG. The release will consist of two 2400 foot, 1600 bpi tapes (approximately 80Mb) and approximately 100 pages of documentation. If you require 800 bpi tapes, please contact USENIX for more information.

The tape that USENIX will be distributing for the first few weeks will **only** support machines with split I/D and floating point hardware. This is not because any work remains to be done, but because we just haven't had the time to build and test a system.

Sites wishing to run 2.10BSD should also be aware that the networking is only lightly tested, and that certain hardware has yet to be ported. Contact Keith Bostic at the address below for current information as to the status of the networking. As of August 6, 1987, the complete 4.3BSD networking is in place and running, albeit with minor problems. The holdup is that only the Interlan Ethernet driver has been ported, as well as some major space constraints. Note, if we decide to go to a supervisor space networking, 2.10 networking will only run on:

11/44/53/70/73/83/84
11/45/50/55 with 18 bit addressing

If you have questions about the distribution of the release, please contact USENIX at:

2.10BSD
USENIX Association
P.O. Box 2299
Berkeley, CA 94710

+1 415 528-8649
{uunet,ucbvax}!usenix!office

If you have technical questions about the release, please contact Keith Bostic at:

{ucbvax,seismo}!keith
keith@okeeffe.berkeley.edu

+1 415 642-4948

Keith Bostic
Casey Leedom

Have You M-o-v-e-d?

Fall seems to be a time when many folks move or change jobs. The result is that we may not have your correct address.

If this issue of *;login:* was addressed incorrectly, **PLEASE** fill out the "change of address" form on the back of the issue and send it in to us.

If you have been getting more than one copy of the Workshop or Conference announcements, please let us know (sending back the "extra" envelopes or labels would help).

4.3BSD Manuals Available to All Members

After a long period of negotiation with both AT&T and the Regents of the University of California, the USENIX Association is now fully licensed for both System V and 4.3BSD. This means that the Association can now offer *all* members of the Association the opportunity to purchase 4.3BSD manuals.[†]

The 4.3BSD manual sets are significantly different from the 4.2BSD edition. Changes include many additional documents, better quality of reproductions, as well as a new and extensive index. All manuals are printed in a photo-reduced 6″×9″ format with individually colored and labeled plastic "GBC" bindings. All documents and manual pages have been freshly typeset and all manuals have "bleed tabs" and page headers and numbers to aid in the location of individual documents and manual sections.

A new Master Index has been created. It contains cross-references to all documents and manual pages contained within the other six volumes. The index was prepared with the aid of an "intelligent" automated indexing program from Thinking Machines Corp. along with considerable human intervention from Mark Seiden. Key words, phrases and concepts are referenced by abbreviated document name and page number.

While two of the manual sets contain three separate volumes, you may only order complete sets.

The costs shown below do not include applicable taxes or handling and shipping from the publisher in New Jersey, which will depend on the quantity ordered and the distance shipped. Those charges will be billed by the publisher (Howard Press).

Manuals are available now. To order, return a completed "4.3BSD Manual Reproduction Authorization and Order Form" to the USENIX office along with a check or purchase order for the cost of the manuals. You **must** be a USENIX Association member. Checks and purchase orders should be made out to "Howard Press." The manuals will be shipped to you directly by the publisher.

Manual	Cost*
User's Manual Set (3 volumes) User's Reference Manual User's Supplementary Documents Master Index	$25.00/set
Programmer's Manual Set (3 volumes) Programmer's Reference Manual Programmer's Supplementary Documents, Volume 1 Programmer's Supplementary Documents, Volume 2	$25.00/set
System Manager's Manual (1 volume)	$10.00

* Not including postage and handling or applicable taxes.

4.2BSD Manuals are No Longer Available

[†] Tom Ferrin of the University of California at San Francisco, a former member of the Board of Directors of the USENIX Association, has overseen the production of the 4.2 and 4.3BSD manuals.

4.3BSD Manual Reproduction Authorization and Order Form

This page may be duplicated for use as an order form

USENIX Member No.: ______________

Purchase Order No.: ______________

Date: ______________

As a USENIX Association Member in good standing, and pursuant to the copyright notice as found on the rear of the cover page of the UNIX®/32V Programmer's Manual stating that

> "Holders of a UNIX®/32V software license are permitted to copy this document, or any portion of it, as necessary for licensed use of the software, provided this copyright notice and statement of permission are included,"

I hereby appoint the USENIX Association as my agent, to act on my behalf to duplicate and provide me with such copies of the Berkeley 4.3BSD Manuals as I may request.

Signed: ____

Institution (if Institutional Member): ______________________________

Ship to:	Billing address, if different:
Name: ______________	Name: ______________
______________	______________
______________	______________
______________	______________
______________	______________
Phone: ______________	Phone: ______________

The prices below **do not** include shipping and handling charges or state or local taxes. All payments must be in US dollars drawn on a US bank.

4.3BSD User's Manual Set (3 vols.)	______	at $25.00 each	= $__________
4.3BSD Programmer's Manual Set (3 vols.)	______	at $25.00 each	= $__________
4.3BSD System Manager's Manual (1 vol.)	______	at $10.00 each	= $__________
Total	______		$__________

[ ] Purchase order enclosed; invoice required.
(Purchase orders **must** be enclosed with this order form.)

[ ] Check enclosed for the manuals: $__________
(Howard Press will send an invoice for the shipping and handling charges and applicable taxes.)

Make your check or purchase order out to "Howard Press" and mail it with this order form to:

Howard Press
c/o USENIX Association
P.O. Box 2299
Berkeley, CA 94710

for office use: m.v.: __________ check no.: __________ amt. rec'd: __________

Future Meetings

USENIX 1988 Winter Conference and UniForum – Dallas

The USENIX 1988 Winter Conference, featuring tutorials and technical sessions, will be held on February 9-12, 1988, at the Grand Kempinski Hotel in Dallas, Texas. It will be concurrent with UniForum 1988, which will also be in Dallas.

AFUU UNIX Convention 88
Paris, March 7-10, 1988

EUUG Spring Conference
London, April 11-15, 1988

USENIX 1988 Summer Conference and Exhibition – San Francisco

The USENIX 1988 Summer Conference and Exhibition will be held on June 20-24, 1988, at the Hilton Hotel in San Francisco, California. There will be a conference, tutorials, and vendor exhibits.

Long-term USENIX Conference Schedule

Feb 8-12	'88 Grand Kempinski, Dallas
Jun 20-24	'88 Hilton Hotel, San Francisco
Jan 31-Feb 3	'89 Town & Country Inn, San Diego
Jun 12-16	'89 Hyatt Regency, Baltimore
Jan 23-26	'90 Washington, DC
Jun 11-15	'90 Marriott Hotel, Anaheim
Jan 22-25	'91 Dallas
Jun 10-14	'91 Opryland, Nashville

Publications Available

The following publications are available from the Association Office. Prices and overseas postage charges are per copy. California residents please add applicable sales tax. Payments **must** be enclosed with the order and **must** be in US dollars payable on a US bank.

Conference and Workshop Proceedings

Meeting	Location	Date	Price	Overseas Mail Air	Overseas Mail Surface
Graphics Workshop IV	Cambridge	October '87	$10	$15	$5
USENIX	Phoenix	Summer '87	$20	$25	$5
USENIX	Wash. DC	Winter '87	$20	$25	$5
Graphics Workshop III	Monterey	December '86	$10	$15	$5
USENIX	Atlanta	Summer '86	$10	$25	$5
USENIX	Dallas	Winter '85	$10	$25	$5
Graphics Workshop I	Monterey	December '84	$ 3	$ 7	$5

The EUUG Newsletter, which is published four times a year, is available for $4 per copy or $16 for a full-year subscription.

The July 1983 edition of the EUUG Micros Catalog is available for $8 per copy.

French UNIX User's Group Conference

Paris

March 7-10, 1988

The French Association of UNIX Users (AFUU) in cooperation with the Bureau International de Relations Publiques is organizing a conference in Paris, 7-10 March 1988.

There will be tutorials on the first day and technical meetings and an exhibition running concurrently the next three days.

While UNIX Convention 88 is intended to be a primarily French event, it is expected that a considerable number of overseas visitors will participate.

The chair of the Program Committee is Christophe Binot. Information is available from:

AFUU c/o SUPELEC
Attn.: Anne Garnery, Convention UNIX 88
Plateau de Moulon
91190 Gif-sur-Yvette
FRANCE

mcvax!inria!afuu!anne

EUUG Spring 1988 Conference

London

April 11-15, 1988

The UKUUG will host the Spring '88 European UNIX systems User Group Technical Conference at the Queen Elizabeth II Conference Center in London. Technical tutorials will be held on April 11 & 12, followed by the three day conference. A pre-conference registration pack will be issued in early December, 1987.

For further information, contact the EUUG Secretariat at:

EUUG
Owles Hall
Buntingford, Herts. SG9 9PL
United Kingdom

Phone: (+44) 763 73039
Fax: (+44) 763 73255 (G2)

Local User Groups

The USENIX Association will support local user groups in the following ways:

- Assisting the formation of a local user group by doing an initial mailing for the group. At least one member of the organizing group must be a current member of the USENIX Association.
- Publishing information on local user groups in *;login:*.

In the **Atlanta** area there is a group for people with interest in UNIX or UNIX-like systems, which meets on the first Monday of each month in White Hall, Emory University.

Atlanta UNIX Users Group
P.O. Box 12241
Atlanta, GA 30355-2241

Marc Merlin	(404) 442-4772
Mark Landry	(404) 365-8108

In the **Boulder**, Colorado area a group meets monthly at different sites for informal discussions.

Front Range Users Group
USENIX Association Exhibit Office
5398 Manhattan Circle
Boulder, CO 80303

John L. Donnelly (303) 499-2600
{boulder,usenix}!johnd

A UNIX users group has formed in the **Coral Springs**, Florida, area. For information, contact:

S. Shaw McQuinn (305) 344-8686
8557 W. Sample Road
Coral Springs, FL 33065

Dallas / Fort Worth UNIX User's Group
Seny Systems, Inc.
5327 N. Central, #320
Dallas, TX 75205

Jim Hummel (214) 522-2324

In **Fresno,** California, the Central California UNIX User's Group (CCUUG) consists of an electronic mailing list to which members may post questions or information. Communication is by uucp; for connection information:

Educational and governmental institutions contact:

Brent Auernheimer (209) 294-4373
Department of Computer Science
California State University
Fresno, CA 93740-0109

CSNET: brent@CSUFresno.edu
uucp: csufres!brent

Commercial institutions or individuals contact:

Gordon Crumal (209) 435-6062
Harry J. Wilson & Company
Insurance Correspondents, Inc.
2350 W. Shaw Ave, Suite 110
Fresno, CA 93711

uucp: csufres!tower!gordon

The **Los Angeles** UNIX Group (LAUG) meets on the third Thursday of each month in Redondo Beach, California. For additional information, please contact:

Drew Bullard (213) 535-1980
{ucbvax,ihnp4}!trwrb!bullard

Marc Ries (213) 535-1980
{decvax,sdcrdcf}!trwrb!ries

In **Minnesota** a group meets on the first Wednesday of each month. For information, contact:

UNIX User's of Minnesota
Shane McCarron (612) 786-1496
ihnp4!meccts!ahby
ahby@mecc.com

In the northern **New England** area is a group that meets monthly at different sites. Contact one of the following for information:

Emily Bryant (603) 646-2999
Kiewit Computation Center
Dartmouth College
Hanover, NH 03755

David Marston (603) 883-3556
Daniel Webster College
University Drive
Nashua, NH 03063

decvax!dartvax!nneuug-contact

In the **New York City** area there is a non-profit organization for users and vendors of products and services for UNIX systems.

Unigroup of New York
G.P.O. Box 1931
New York, NY 10116

Ed Taylor (212) 513-7777
{attunix,philabs}!pencom!taylor

The **New Zealand** group provides an annual Workshop and Exhibition and a regular newsletter to its members.

New Zealand UNIX Systems User Group
P.O. Box 13056
University of Waikato
Hamilton, New Zealand

In the **Orlando**, Florida area the Central Florida UNIX User's Group meets at 7pm on the third Thursday of every month at different sites. Programs include informal presentations and demonstrations, followed by discussions of issues important to UNIX users, programmers and administrators. For more details, please contact:

Mike Geldner (305) 862-0949
Sun Microsystems
codas!sunfla!mike

Ben Goldfarb (305) 275-2790
Univ. of Central Florida
goldfarb@hcx9.ucf.edu

Mikel Manitius (305) 869-2462
AT&T
{codas,attmail}!mikel

A group has started in the **St. Louis** area:

St. Louis UNIX User's Group
Plus Five Computer Services
765 Westwood, 10A
Clayton, MO 63105

Eric Kiebler (314) 725-9492
ihnp4!plus5!sluug

The **San Antonio** UNIX User's (SATUU) maintains communications largely by a local uucp network. They also meet the third Wednesday of each month at 7pm at a user site. For further information, contact:

William T. Blessum, M.D. (512) 692-0977
7950 Floyd Curl Dr. #102
San Antonio, TX 78229-3955
{gatech,ihnp4}!petro!bles!wtb

The local uucp network "postmaster" is:

Bruce Andreen (512) 656-3053
{gatech,ihnp4}!petro!bruce

In the **Seattle** area there is a group with over 150 members, a monthly newsletter, and a software exchange system. Meetings are held monthly.

Bill Campbell (206) 232-4164
Seattle UNIX Group Membership Information
6641 East Mercer Way
Mercer Island, WA 98040

uw-beaver!tikal!camco!bill

A UNIX/C language users group has been formed in **Tulsa**. For current information on meetings, etc. contact:

Pete Rourke
$USR
7340 East 25th Place
Tulsa, OK 74129

The **Washington, D.C.**, area a group meets the first Tuesday of every month. For information, contact:

Washington Area UNIX User's Group
2070 Chain Bridge Road, Suite 333
Vienna, VA 22180

Samuel Samalin (703) 448-1908

USENIX Association
P.O. Box 2299
Berkeley, CA 94710

First Class Mail

FIRST CLASS M
U.S. POSTAGE P
Berkeley, CA
Permit No. 993

Conferences and Workshops

cpio Discussion

Book Reviews

USENIX Board Elections

Change of Address Form

Please fill out and send the following form through the U.S. mail to the Association Office at the address above.

Name: ______________________________ Member #: ________

OLD: ______________________________

NEW: ______________________________

Phone: ______________________________

uucp: {uunet,ucbvax}! ______________________________